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INCREASED ADRENERGIC NERVOUS DENSITY IN HUMAN PERMANENT ATRIAL FIBRILLATION AND STRUCTURAL HEART DISEASE: A CONTROLLED AUTOPSY STUDY

Moderated Poster Contributions
Hall C
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Session Title: Autonomic Influences on Atrial Fibrillation
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Background: Possible changes the intrinsic cardiac autonomic nervous system (ICANS), involving the ganglionated plexus present in fat-pads (FP), could be responsible for the genesis and maintenance of permanent atrial fibrillation (PAF) in human heart.

Methods: Aiming to analyze its relationship between PAF and ICANS, we studied 13 hearts from autopsies of patients with PAF and chronic heart disease (group I), comparing with 13 cases paired according to disease underlying PAF, but without this arrhythmia (group II - control). Nine samples were taken in which heart - two samples in the right atrium, three in the left atrium - in the middle portion of the left atrium oblique vein, at the junction of left superior pulmonary vein and in the auricle, three FPs, left atrial superior, right atrial posterior and the left atrial posteromedial and one sample of the ventricular septum. The ICANS was analyzed through immunohistochemistry for S-100 (general) and tyrosine hydroxylase (sympathetic) regarding the: sample area; amount, density and area of nerve fibers (sympathetic/parasympathetic) and sympathetic/parasympathetic fiber proportion. We compared the results using t-Student test.

Results: Analysis of the ICANS revealed in Group I: nerve fibers with the smallest area/unit proportion (5,791.5 vs 7,719.7µ2 p=0.011), increased of sympathetic nerve fibers density 0.059 vs 0.021 unit/mm2 p= 0.012) and increased sympathetic fibers proportion (19,8% vs 13,9% = 0.048). There was no change in parasympathetic nerves.

Conclusions: Changes in the density and proportion of sympathetic nerve fibers, appear to be related to PAF in human heart, indicating the importance of autonomic modulation in this arrhythmia.